



Portable In-flight Recorder and Particle Sensing

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What we have done?

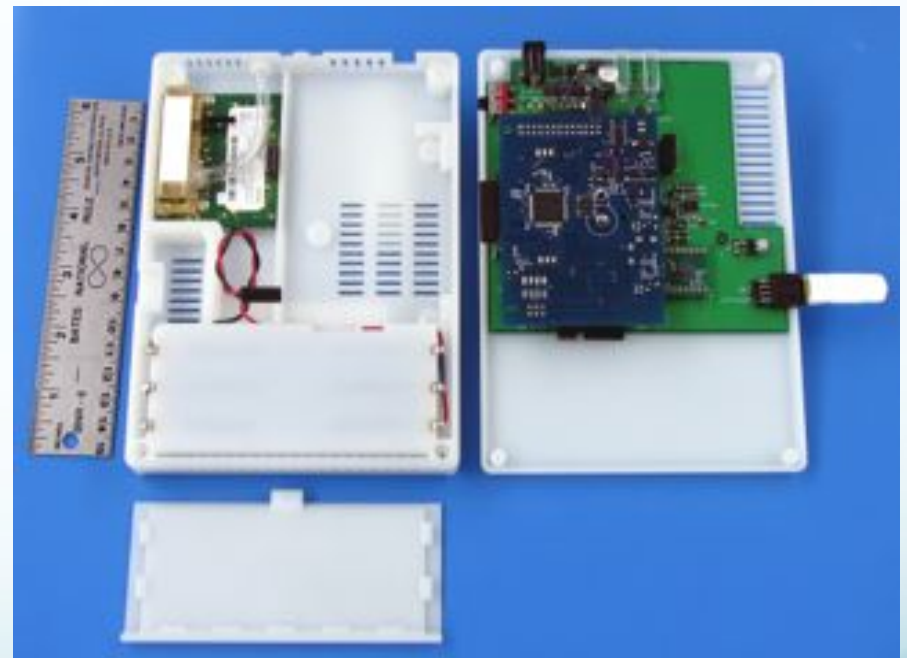
- Developed a portable sensor interface platform for current and future projects
- Developed a wireless sensor network for bleed air monitoring and detection

1st Gen



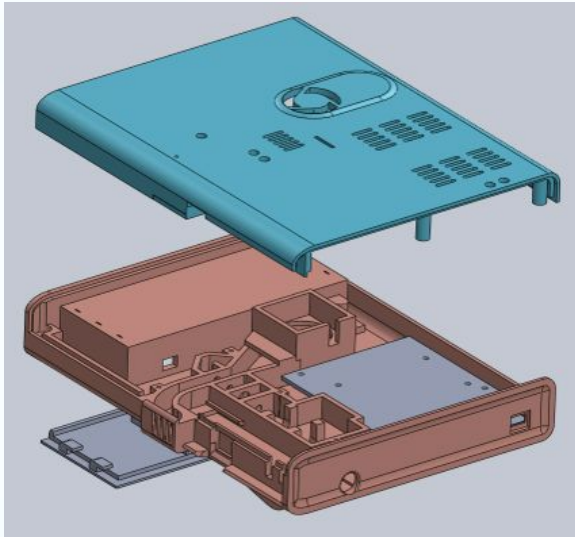
Sensors: Temp, Humidity, CO₂, Pressure, Noise Level

2nd Gen



Sensors: Temp, Humidity, CO₂, Pressure, Noise Level
Collected 200+ data points

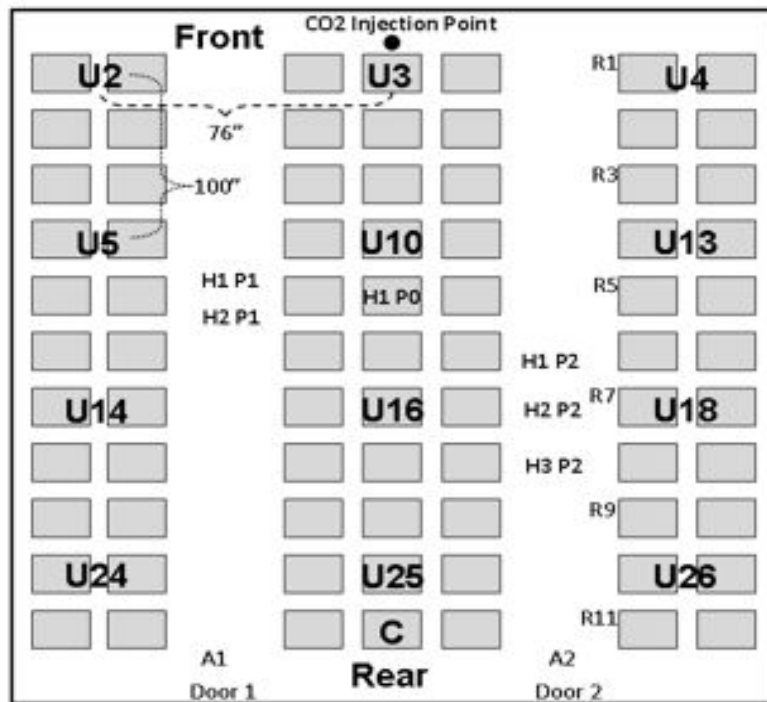
3rd Gen



Sensors: Temp, Humidity, CO, CO₂, Noise Level, Pressure, Particulate Matter, SpO₂(option), Heart rate (option). So far, we have collected 120 flight data points

1st 767-Mockup Test Setup

- Network (12 Nodes)
 - CO₂(4 sec), Humidity(2 sec), Temperature (2 sec)



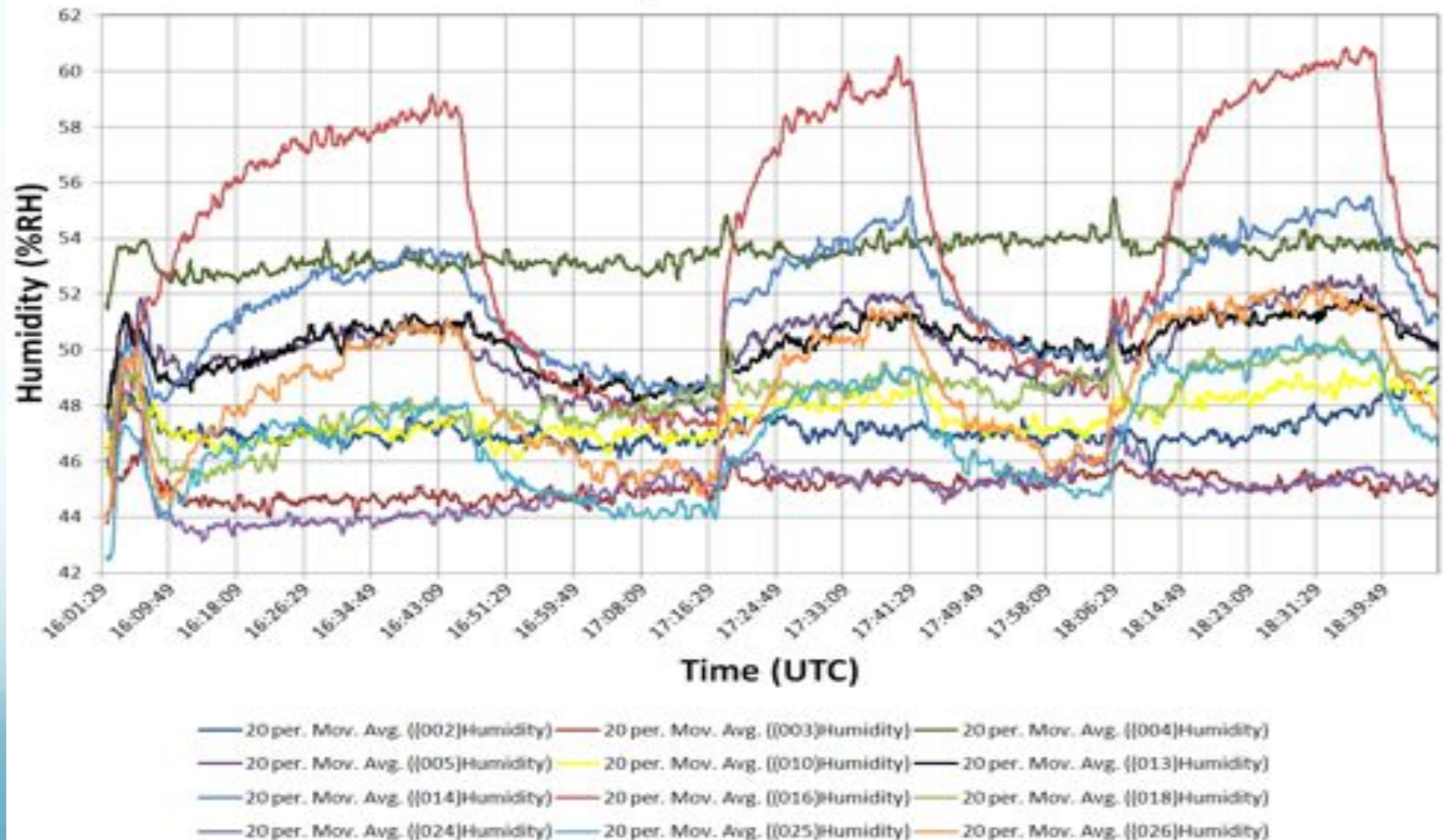
Key:
 U# Placement of a unit of number "u"
 C Placement of the coordinator
 H#P# Placement of humidifier "H" at position "P"
 R# Row number "r"
 A# Aisle number "a"

¹Note that a given humidifier H# can only be in at most 1 position P# for any given test

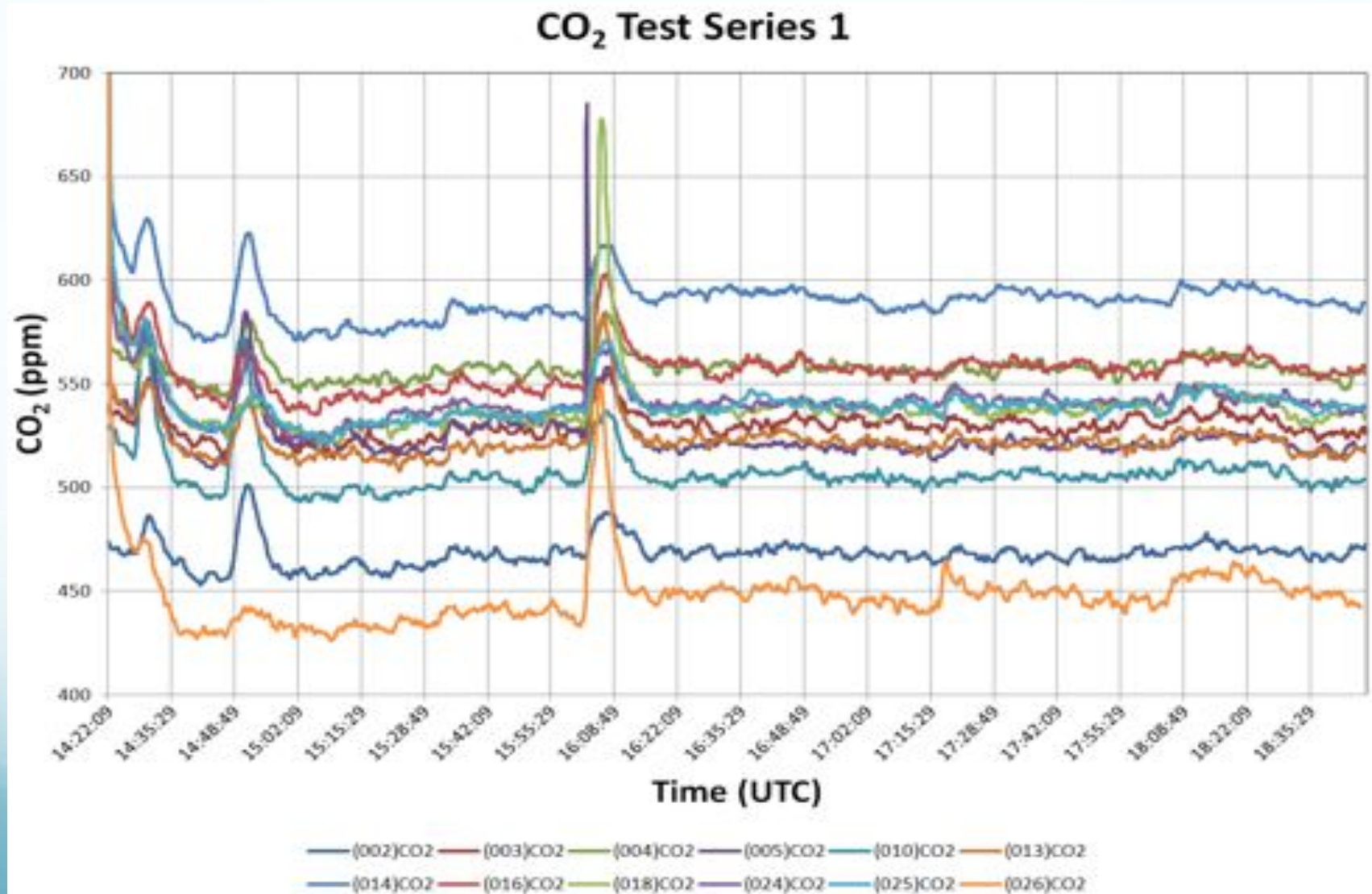


Humidity

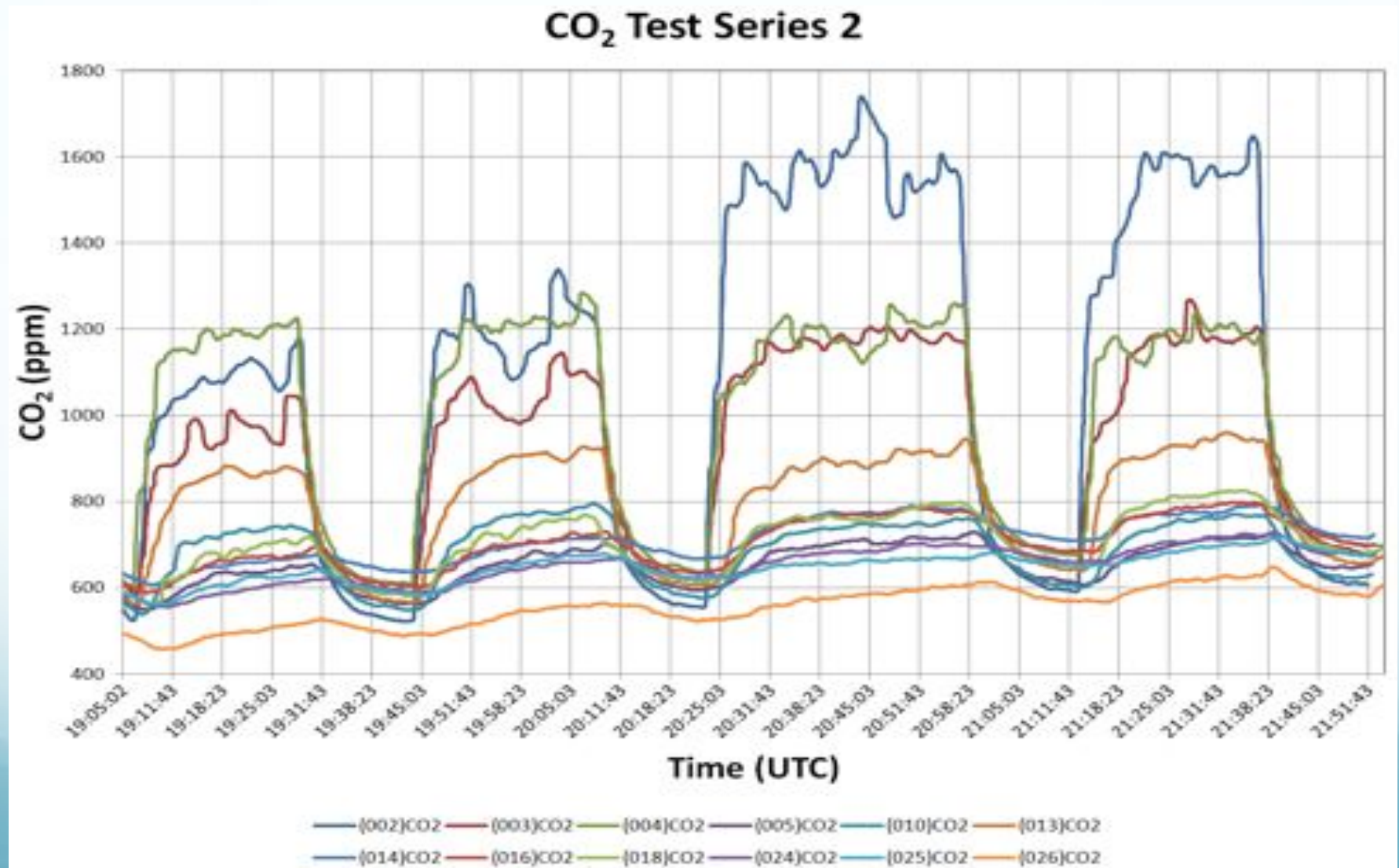
Humidity Test Series 1 P2



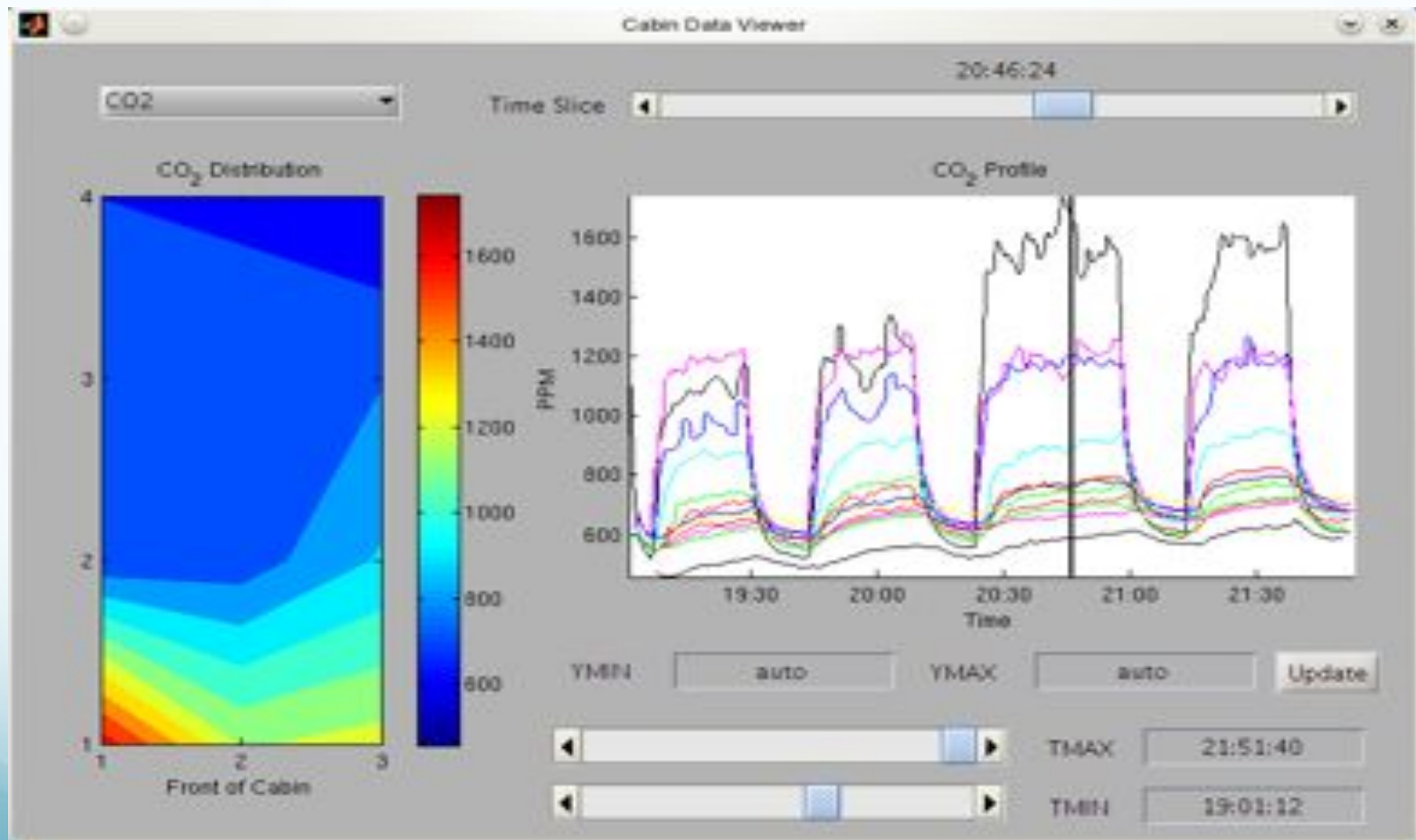
CO₂



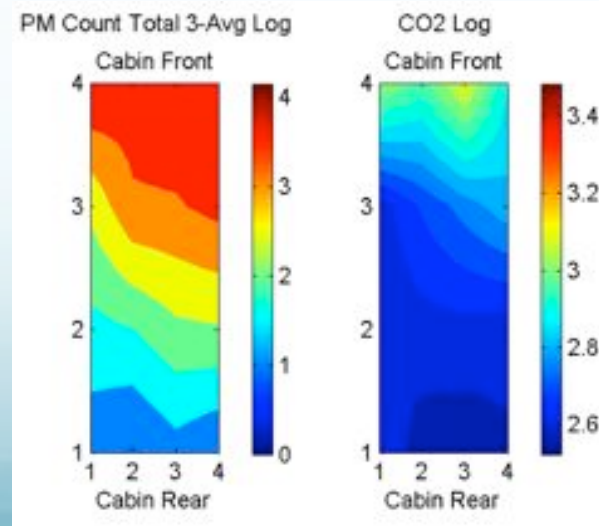
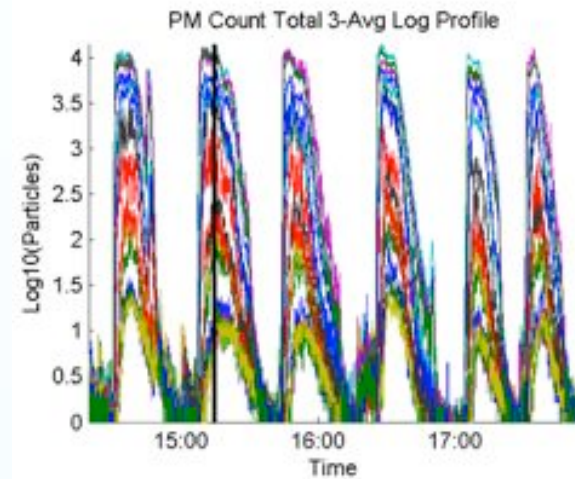
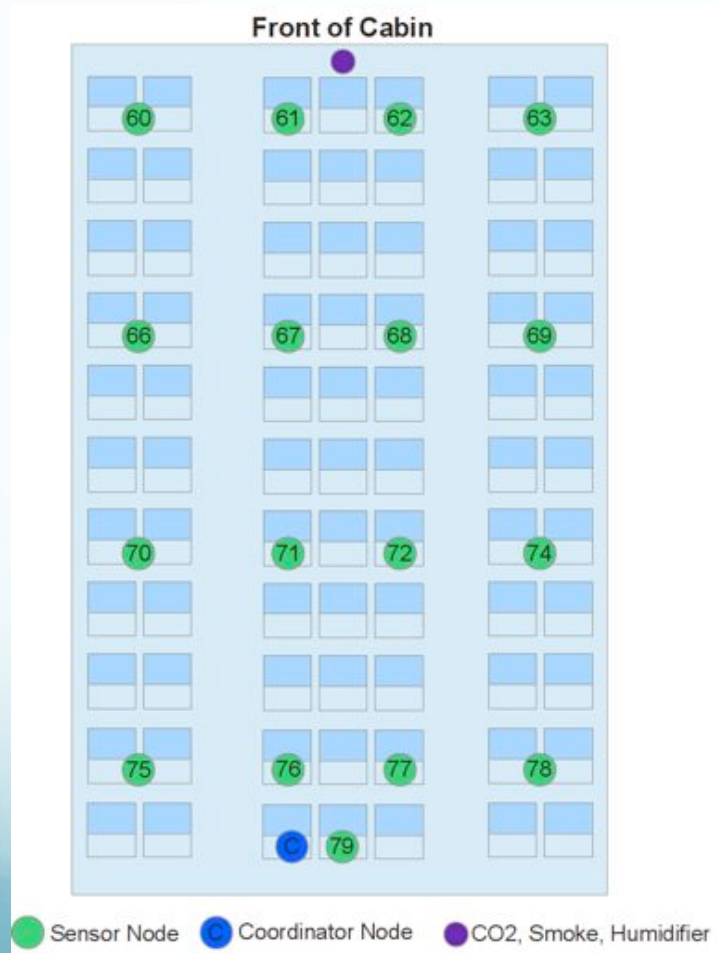
CO₂



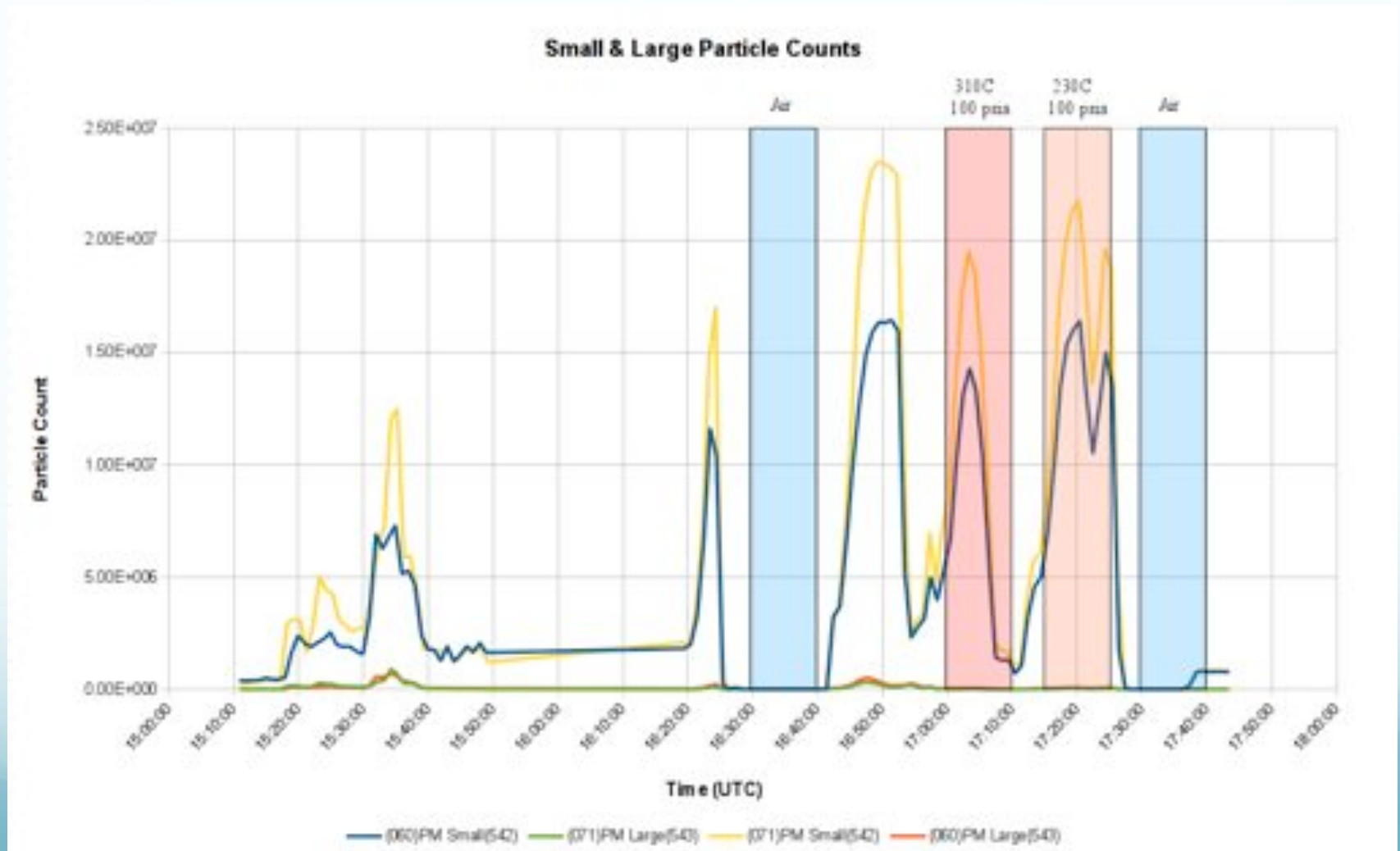
Software Package

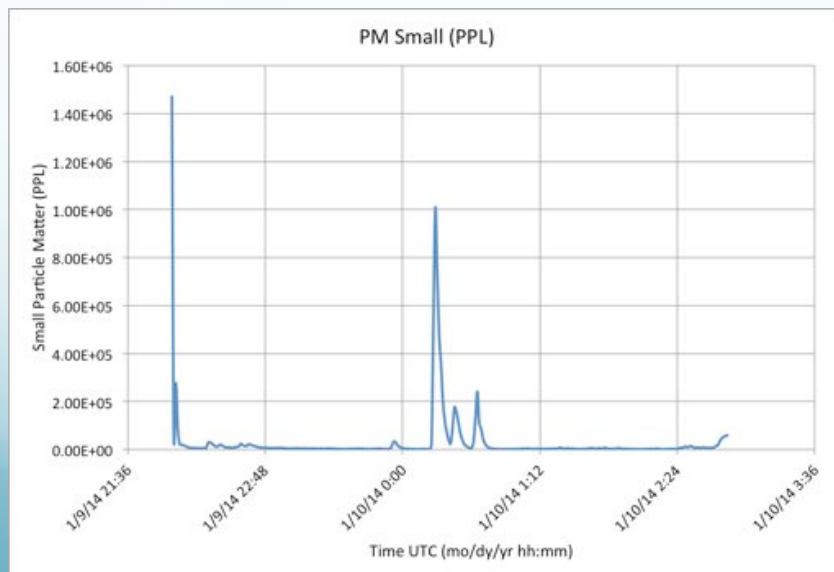
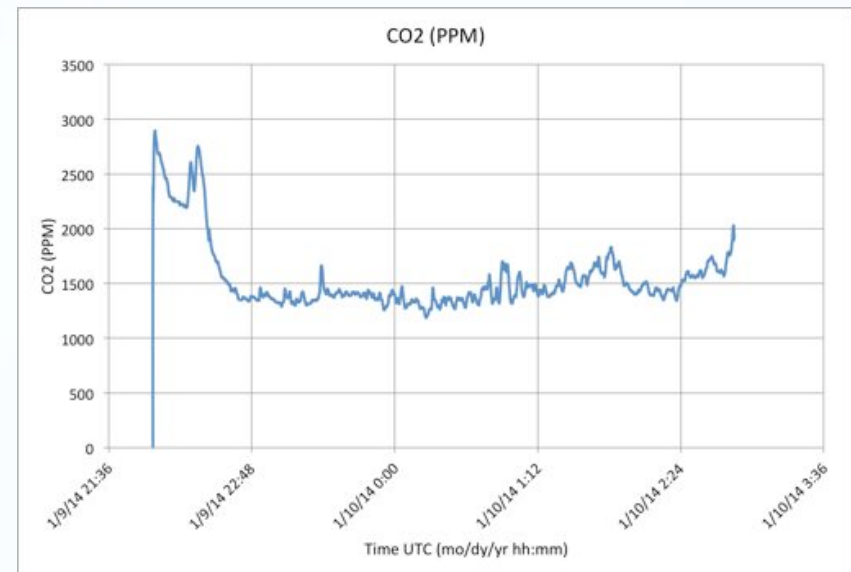
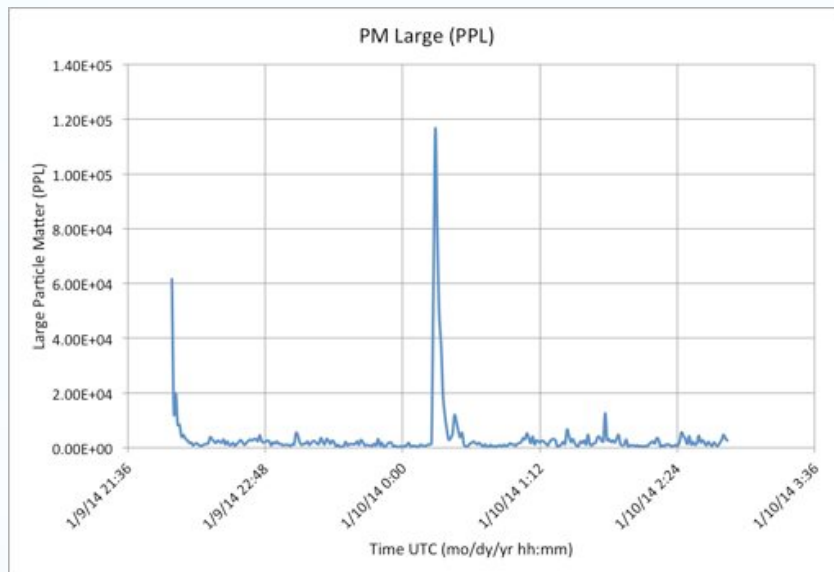


2nd 767-mockup Test

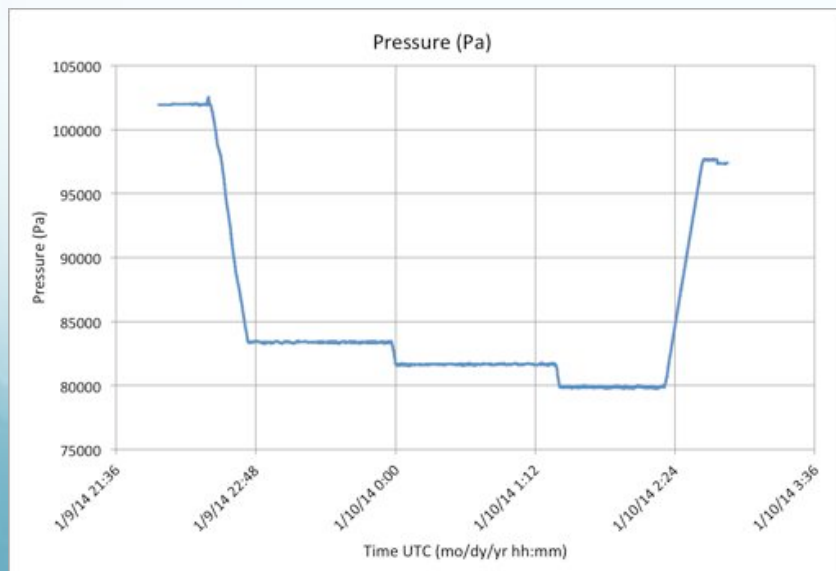
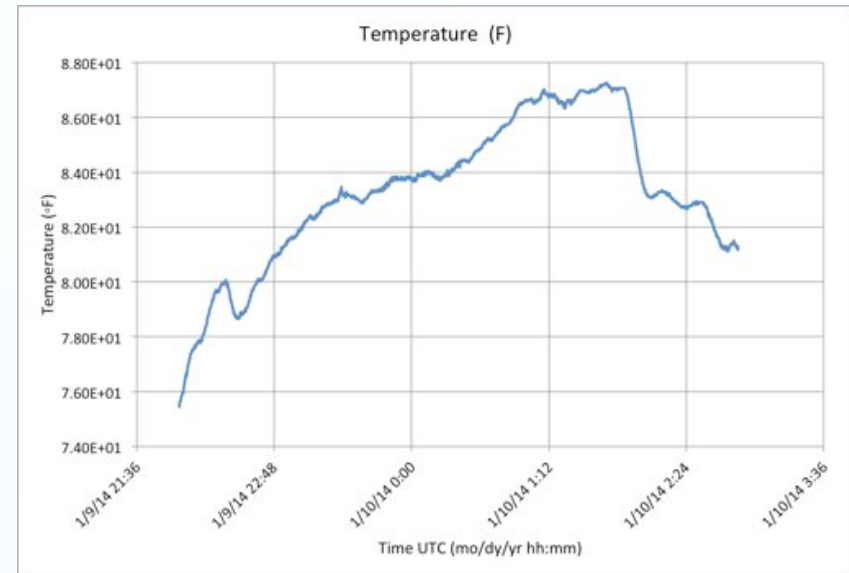
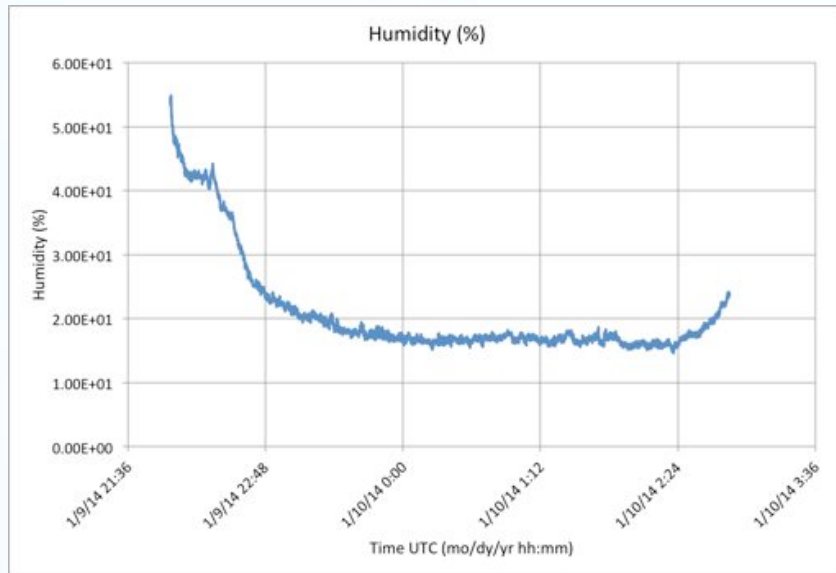


Heated Oil Test (3rd Gen)





Data for a flight from
Florida to Arizona



Data for a flight from
Florida to Arizona